farm and home

UNIVERSITY OF MINNESOTA 1
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U. S. DEPARTMENT OF AGRICULTURE

FACT SHEET

AGRONOMY
No. 6
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GRAIN SORGHUM FOR MINNESOTA?

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SOME MINNESOTA FARMERS are now growing grain sorghum—a major crop in Texas, Oklahoma, and Kansas, and a very important crop in Nebraska, South Dakota, and several other states. The drouth- and heat-resistance of grain sorghum have given it the name of "corn crop of the Southern Great Plains." Many Minnesotans are interested in growing grain sorghum on land diverted from corn by the government farm program. Their question is: "Will grain sorghum be a good substitute for corn on my farm?"

Some knowledge of the characteristics of grain sorghum is needed to answer that question.

Kinds of Sorghum

Since World War II, all commercially important grain sorghum varieties are short, combine-harvested types. They should not be confused with the tall-growing sweet sorghum (sorgo or cane) raised for silage in Minnesota and, to a small extent, for sorghum syrup. Still another kind of sorghum is Sudangrass, which is mostly used for pasture. Broomcorn sorghum, used for brooms, is not grown in Minnesota.

Kernels on grain sorghum heads are less than half-covered by hulls, and thresh out free of hulls. Kernels on sweet sorghum heads are more than half-covered by hulls, and the hulls remain on most kernels after threshing. Kernels on Sudangrass heads are completely covered by hulls, which remain on the kernels after threshing.

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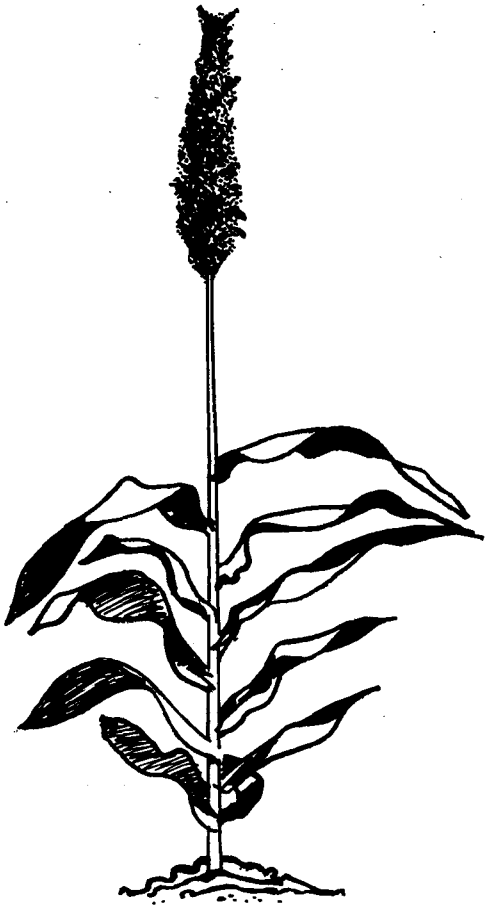


Sweet sorghum kernels are bitter. Grain sorghum kernels are palatable, and are considered to have a feed value of 90 to 95 per cent that of corn. Grain sorghum stalks are of little value; generally they are left in the field after combining.

Varieties of Grain Sorghum

Norghum and Reliance are the best varieties. Reliance has a slightly more vigorous seedling growth and tolerates a wider range of planting and harvesting dates, but Norghum will probably yield more under good conditions. Although they should be planted later than corn, these varieties generally mature about the same time as corn hybrids adapted to the south central zone, 103-109 days. However, sorghum is quite variable in maturity. The upper kernels ripen early; the lower kernels in the head ripen later. Tiller (sucker) heads ripen still later. Therefore, cool weather and early frost can reduce yields by preventing development of the late kernels.

Norghum and Reliance were developed at South Dakota State College by crossing and selection. Seed for planting can be saved from the commercial crop—provided it was grown isolated from other varieties or kinds of sorghum. Sorghum is mostly self-pollinated, but there is considerable natural crossing.

Hybrid grain sorghums are a recent development. The better experimental hybrids are reported to give increased yields over pure-line varieties, just as hybrid corn has given increased yields over open-pollinated varieties. The Texas Agricultural Experiment Station has been a leader in developing male sterile lines and their use in hybrids. Our present information indicates that the new hybrids are too late-maturing for Minnesota, although we have not tested them here.

Popsorghum was tested in Anoka and Redwood Counties, but proved to be too late in maturity.

Reprinted from MINNESOTA FARM AND HOME SCIENCE, Vol. XIII, No. 3, May 1956.

Growing Grain Sorghum

Cold soil at planting time, weeds, and grain moisture at harvest time are major problems in Minnesota. Sorghum needs a warm soil to germinate and grow. Cold weather after planting results in poor stands and in weeds. Young sorghum plants are poor weed competitors—and 2,4-D is not recommended for sorghum, unless the weeds are extremely bad and can't be controlled by cultivation.

Plant grain sorghum the last week in May or the first week in June. Treat the seed with Arasan or captan, at the rate of 2 ounces per bushel of 56 pounds. Plant no deeper than one inch. Use corn planter plates with holes large enough to hold 3 to 5 kernels. Drill about 10 kernels per foot, or about 5 pounds per acre in rows 40 inches apart. This should give a final stand averaging about one plant every 6 inches, which is about right for a medium-textured soil. Wise postemergence use of a spike-tooth harrow will reduce an excessively thick stand.

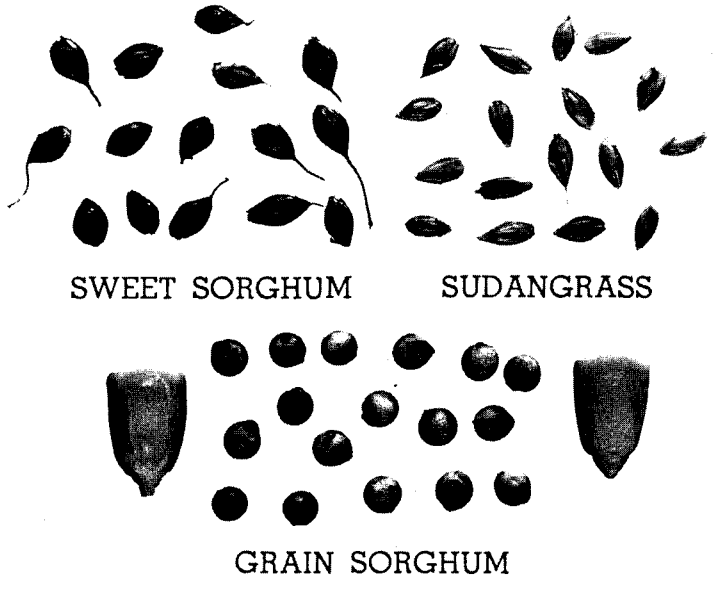
Harvest by combining the standing crop. Moisture content of the kernels should not exceed 12 per cent for safe storage. Grain sorghum which is mature and dry cracks easily and the small pieces are lost, so combine cylinder speed and concave clearance should be carefully adjusted.

Grain Sorghum vs. Corn or Feed Barley

In order to compare sorghum with corn in grain production per acre, we planted adapted varieties of the two crops side-by-side for three years on farms in southwestern Minnesota and in Anoka County (table 1). The Anoka trials were on very poor sandy soil. A similar comparison of Norghum grain sorghum with Vantage feed barley was made for two years in southwestern Minnesota and at Rosemount (table 2).

Table 1. Comparative average grain yields of grain sorghum and corn in southwestern Minnesota and in Anoka County

Variety	Years of trial	Southwestern Minnesota	Anoka County
		(pounds per acre)	
Sorghum			
Norghum	1953-55	3,774	2,083
Reliance	1954-55	2,778	1,658
Corn			
Minhybrid 408, 503, 607	1953-55	5,176	1,037



Hulls on grain sorghum are removed completely in threshing. Note the relative size of the kernels in comparison with corn.

Table 2. Comparative average grain yields of Norghum sorghum and Vantage feed barley in southwestern Minnesota and at Rosemount

Variety	Years of trial	Southwestern Minnesota	Rosemount
		(pounds per acre)	
Sorghum			
Norghum	1951-52	1,989	1,392
Barley			
Vantage	1951-52	2,570	2,112

Sorghum yields were more variable than those of corn or barley. Years like 1955—when the weather was warm at planting time, and warm and dry at ripening time—were very favorable. Years of cool weather at planting and ripening times were much more detrimental to sorghum than to corn.

Moreover, yields tell only part of the story. Tractor-cultivation was sufficient to keep weeds reasonably well controlled in the corn plots, while additional hand work was generally necessary in the sorghum plots. Also, the use of grain sorghum in Minnesota is mostly limited to feeding livestock on the farm where it was raised. Marketing for cash might be difficult in Minnesota. And in the case of crop failure, grain sorghum has very little salvage value. Corn, on the other hand, has considerably more value for silage or fodder.

Summary

Except under drouthy conditions, corn will generally yield considerably more grain in Minnesota than will grain sorghum. Grain sorghum requires a long growing season; therefore it is adapted to southern Minnesota only. Because of the difficulty in getting uniform stands, controlling weeds, and problems of harvesting and marketing, grain sorghum would have to yield considerably more than corn to warrant its use as a substitute. Soybeans planted on land diverted from corn by the farm program might prove to be more profitable for Minnesota farmers than grain sorghum. And cash from the soybean sales could be used to purchase feed grain.

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Cooperative Extension Work in Agriculture and Home Economics, University of Minnesota, Agricultural Extension Service and United States Department of Agriculture Cooperating, Skuli Rutford, Director. Published in furtherance of Agricultural Extension Acts of May 8 and June 30, 1914.